SWEN 310: Operating System
HW#1: Shell Script

Preparation:

1. Check out the repo from Github.
2. Build and run the Docker container
   a. **MacOS or Linux**
      You can run the Shell-Script to automatically run the container
      `./clean_start.sh`
      or you can use the Windows instructions below to manually run a new docker container for doing your homework
   b. **Windows**
      Open the PowerShell and the following command
      (1) Change to the homework folder that you just "git clone"
         `cd {the_checkout_homework_folder}`
      (2) Build a new docker image called ubuntu_hw
         `docker build -t ubuntu_hw .`
      (3) Run a docker container based on the image "ubuntu_hw"
`docker run –itd –p8888:8888 --rm --name ubuntu-os-hw -v"$PWD\share":/home/app ubuntu_hw`
3. Enter the "Bash Shell" of the Ubuntu container
   `docker exec -it ubuntu-os-hw /bin/bash`
4. Use **VSCode** in your host OS in `{your_homework_folder}/share` or **vi** in your Ubuntu in `/home/app` and then move them to `answer` folder from `share` folder in the <u>Host OS</u> for submission.
5. You need to execute or test your shell script in /home/app folder.

To-do:

Please write a BASH shell script, called "*show_ps.sh*", to provide the following functions:

(1) Print your name
(2) Show the current date and time
(3) Show the machine's hostname
(4) Show the environment the value of the variable $HOME
(5) Keep monitoring the top three CPU usage processes and print them out until a user Press Enter to exit the monitoring
   a. For getting the top three CPU usage processes, you must use "ps" commands
   b. Please also print out the header like the following
   c. The time interval of print out is 1 second.
(6) Show a prompt "`Press Enter to exit …`" to guide user to hit enter key for exist the command (process).

You can refer to the sample codes to write this assignment.

The following is the output example after executing the script.

```
Name: Aaron
Current date and time: Wed 13 Sep 2023 07:39:39 AM UTC
Machine name: ubex
/home/vagrant
Press Enter to exit...
USER PID %CPU %MEM VSZ RSS TTY STAT START TIME COMMAND
mysql 985 0.6 4.8 1790516 397364 ? Ssl 02:13 2:03 /usr/sbin/mysqld
vagrant 1483 0.1 0.0 155624 2864 ? Sl 02:13 0:38 /usr/bin/VBoxClient --draganddrop
root 1 0.0 0.1 169872 13332 ? Ss 02:13 0:02 /sbin/init

Press Enter to exit...
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Press Enter to exit...
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```

Submission:
Put your *show_ps.sh* to your **answer** folder and then commit your repo as a submission.